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MAY 13 2013

Ref: EPR-N

Cindy Bladey, Chief
Rules, Announcements, and Directives Branch
Office of Administration
Mail Stop: TWB-05-B10M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Draft Environmental Impact Statement
Ross In-Situ Uranium Recovery Project,
CEQ#: 20130073

Dear Ms. Bladey:

The U.S. Environmental Protection Agency Region 8 (EPA) has reviewed the U.S. Nuclear Regulatory Commission's (NRC's) Draft Environmental Impact Statement (Draft EIS) for the proposed Ross In-Situ Leach Uranium Recovery (ISR) Project in Crook County, Wyoming. Our comments are provided for your consideration pursuant to our responsibilities and authority under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4332(2)(C) and Section 309 of the Clean Air Act (CAA), 42 U.S.C. Section 7609.

Project Background

The issuance of an NRC license to possess and use source material for uranium milling requires an EIS. The Ross ISR Draft EIS (supplement to NRC's Generic EIS for In-Situ Leach Uranium Milling Facilities) analyzes environmental impacts associated with a proposal from Strata Energy, Inc. (Applicant) to develop the new source byproduct materials license for the proposed Ross ISR Project. The Draft EIS presents three Alternatives: (1) the Proposed Action for ISR mining and processing, (2) the No Action Alternative, and (3) a North Ross Project Alternative. For the Proposed Action, uranium would be produced over a 10 to 14 year period by using ISR methods and processed at a Central Processing Plant (CPP) which would also process uranium-loaded resins from satellite projects operated by the Applicant or from offsite water-treatment operations. The CPP is designed to process 1.4 million kilograms/year (kg/yr) of yellowcake, four times the capacity necessary for recovery of uranium from the Ross Project. The CPP also includes a vanadium recovery circuit to recover the vanadium from the uranium-depleted solutions.

General Comments

The NRC does a commendable job of presenting very complicated information about the ISR phases in a manner that is understandable. We offer the following comments and recommendations focused on

ground and surface water, air quality, and radiation and radon. Additionally, we have attached edits and modifications that the EPA suggests will help improve clarity and consistency in the Final EIS.

The Draft EIS relies on permitting requirements to minimize the potential impacts of the Proposed Action. To help assure that the required protection and mitigation measures are understood by the public, regulatory agencies, the Applicant and decision makers, we recommend that the Final EIS and Record of Decision (ROD) document the specific air quality and underground injection control requirements; as well required best management practices (BMPs) that are included in the permits.

Our review found apparent inconsistencies that make it difficult determine what information was used in evaluating the environmental impacts. For instance, the number of "well field areas" and total number of injection and recovery wells are described as 15- 25 and 1,400- 2000, respectively, in the executive summary and in Section 2.1.1. However, in Section 2.1.1.4, which discusses decommissioning, the total number of wells to be abandoned including all UIC Class III injection and recovery wells, monitoring wells, and the UIC Class I injection wells is listed as "between 750 and 1,000 based upon the Applicant's estimate of 40 recovery wells per each of 15 – 20 well field modules plus monitoring wells." The overall number of project recovery and injection wells is not clearly identified in the Draft EIS and it is therefore difficult to determine whether the associated impacts are properly identified. We recommend the Final EIS clarify this issue and confirm that the environmental impacts analyses and mitigation measures are based on the accurate project scope.

The Draft EIS states that, "The WDEQ [Wyoming Department of Environmental Quality] expressed concern regarding the proposed location of the Central Processing Plant (CPP) and the evaporation ponds along with fugitive dust and emissions," (page 1-15, Line 42-43). The EPA recommends the Final EIS provide more information about WDEQ's concerns and how the EIS has addressed through project design or mitigation measures.

Protecting Ground and Surface Waters

Management of drilling wastes: The Draft EIS discusses using unlined mud pits near each well for disposal of drilling fluids. Given the relatively shallow ground water at the project location and the potential for contaminants to leach into the ground water, we recommend that more protective waste management options for the drilling waste be considered. For instance, other recent potential uranium ISR projects have proposed using 6,000 gallon storage tanks and reuse of fluids for drilling.

Additionally, the Draft EIS mentions that "technologically enhanced naturally occurring radioactive material (TENORM) wastes would be generated during well drilling and these wastes would be managed onsite." The Draft EIS further states that the "TENORM water [from drilling] is discharged under a temporary WYPDES Permit." Although the drilling fluids and mud are handled under the permit, it is important that the Final EIS described the potential for environmental impact associated with these wastes, including the level of radioactivity and metals in the drilling fluids and mud.

Consumptive ground water use and water balance: The Draft EIS states, "Impacts from consumptive use of ground water from the ore zone would be minimized by cessation of water withdrawals by the Merit oil-field water-supply wells. The ground-water model simulated a single operational sequence of wellfield development, recovery, and aquifer restoration. Different operational approaches could be more effective in reducing impacts, and the Applicant proposes to investigate these as wellfield

installation and testing progresses," (Page 4-36 lines 16-20). It is important that the range of impacts of consumptive groundwater use is evaluated in the Final EIS. Additionally, we recommend the Record of Decision (ROD) include a requirement that prior to operation, modeling that utilizes multiple operational well fields is completed. We also recommend the ROD document a commitment to identifying and implementing mitigation measures that prevent excursions from concurrent operation of multiple well fields.

The Draft EIS provides a good synopsis of specific project phase environmental impacts. The actual project operation will include multiple project phases occurring concurrently. Concurrent operation makes it difficult to obtain from the Draft EIS a full picture of surface and ground water environmental impacts at any one point of the project. To address this, the EPA recommends including in the Final EIS a flow diagram or table that provides a water balance for each phase/process. This information will provide a more inclusive representation of the surface and ground water uses and the related impacts and mitigating measures.

Aquifer plugging: There is discussion of the Nubeth experiment in the Draft EIS relative to "undesirable plugging of the aquifer..." There is no explanation of why the aquifer became "plugged" or what this means in terms of the project operation or environmental impacts. We recommend including in the Final EIS any lessons learned from the failure of this experiment. This information will be valuable in providing reassurance that the situation that caused the plugging of the aquifer is understood and will be avoided for the proposed Ross project.

Aquifer restoration: On page 2-34, the Draft EIS states, "Following aquifer restoration, the Applicant would monitor the ground water by quarterly sampling to demonstrate that the approved standard for each constituent has been met and that any adjacent nonexempt aquifers are unaffected." We suggest the Final EIS include a specific plan for how the Applicant will determine whether adjacent nonexempt aquifers are protected and identify mitigation measures that would be employed to address any impacts to these aquifers.

Oshoto Reservoir water use: The environmental impacts section indicates that water may be taken from the Oshoto Reservoir for site operations and may result in groundwater table impacts due to the interaction between the reservoir and the shallow ground water. We recommend that the Final EIS provide additional information regarding the impacts to the shallow ground water and the potential for associated impacts to wetlands and springs around Lake Oshoto related to its water use and project construction. For instance, the Draft EIS mentions that the groundwater table can be impacted by the level of water in the reservoir. If the groundwater table changes due to use of the reservoir water, we recommend the Final EIS assess the potential for impacts to wetlands and springs near the reservoir.

Additionally, the EPA has learned that, during the license application period, a water rights issue has arisen with other users of appropriated water from Oshoto Reservoir. The Wyoming State Engineers Office has reported that a water rights dispute has been lodged for adjudication on behalf of an oil company needing water from Oshoto Reservoir for use in enhanced recovery with water-flooding techniques. The EPA recommends that the Final EIS reassess any changes to cumulative impacts and subsequent mitigation measures resulting from the potential water use conflict.

Shallow ground water: We agree with the Draft EIS that the containment barrier wall (CBW) surrounding three sides of the CPP, in conjunction with the lined surface impoundments and shallow

groundwater monitoring system, are important mitigation measures for protecting the shallow ground water from contamination. If the CPP is used for processing uranium resins from satellite projects as stated in the Draft EIS, the project will be extended to 14 years or more. It is important to include in the Final EIS, the estimated design life of the surface impoundments and the CBW and any additional protective measures that may be employed to assure the continued protection of shallow ground for the life of the CPP operations.

The Draft EIS also states that any seepage of spillage collected on the facility side of the CBW will be discharged to the surface impoundments. We recommend that the Final EIS include information about how any contaminated water will be collected in the French drains and moved to the impoundments without impacting the down-gradient groundwater quality or the groundwater gradients within the CBW area.

Surface impoundments: Since 40 CFR Part 61 Subpart W applies to the surface impoundments, and any other uranium byproduct impoundments at the site, the EPA recommends the Final EIS discuss the applicability of Subpart W and provide a detailed description of the surface impoundment design and size. Please note that the EPA is currently considering revisions to 40 CFR Part 61, Subpart W that may result in changes to this requirement. See http://www.epa.gov/radiation/neshaps/subpartw/rulemaking-activity2.html for further information.

Deep Well Injection: The Draft EIS discusses the impacts of deep well injection for the Ross project, as well as satellite, future and proposed projects. To fully understand the impacts and the capacity of the formation used for deep well injections, we recommend including an assessment of the current and potential future deep well injections by other industries, including the oil and gas industry, in the Final EIS cumulative impact evaluation.

Protecting Air Quality

Emission Inventory and Impact Analysis: As stated in the Draft EIS, the phases of the project will overlap. While air impacts associated with any one phase may be small, the cumulative impacts from multiple phases that are occurring concurrently may be greater. In order for the public and decision maker to understand the full impacts in any one year, we suggest including Table 5-2 from *Air Quality Permit Application for Ross In-Situ Uranium Recovery Project* (STRATA 2011c) within the Final EIS.

Cumulative Impact Analysis: In the Draft EIS cumulative air quality impacts discussion, other ISR facilities, mining, and oil and gas facilities are included, but other industries are not. There are at least six major power plants within the 80 km (50 mile) cumulative impact analysis range. Also, the Draft EIS utilizes information from 2003 and 2005 to disclose mining, and oil and gas (including coal bed methane) development. There has been growth in oil and gas development since 2005. To assure accurate assessment of cumulative impacts, the EPA recommends that the power plants and updated oil and gas information are included the Final EIS cumulative air impacts discussion.

Radon and Radiation

Radiation and radon dose: When radiological dose is discussed throughout the document in terms of dose received or dose limits, it is not clear whether radon and radon progeny are included. This

information is important to understanding the appropriate dose limit. We recommend clarifying in the Final EIS whether radon is included and the comparable dose limits that apply.

Ground and surface water radiation exposures: The Draft EIS indicates on page 3-108 (lines 23-27) that ground water sample analytical results for radionuclides are at or below the respective detection limit or maximum contaminant limits (MCLs). This seems to contradict what is presented in Table 3.21 for uranium and gross alpha in the ore zone, the piezometers in the SA zone, and gross alpha radionuclides in the DM zone. The results for these samples show that some sample concentrations are above the MCLs that are presented on page 3-98. We recommend the Final EIS provide clarification regarding the current conditions of ground water so any potential impacts to them can be understood by the public and decision maker.

Radon: The Draft EIS references a document containing information on the estimated radon released from the facility, but the estimate is not included in the Draft EIS. So that the public and decision makers can clearly understand whether there is a potential radon impact to public health, we recommend the Final EIS include this radon release estimation.

The EPA's Rating and Recommendations

Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on the procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action, the EPA is rating this Draft EIS as Environmental Concerns- Insufficient Information (EC-2). The "EC" rating indicates that the EPA review has identified environmental impacts that need to be avoided in order to fully protect the environment. The "2" rating indicates that the EPA review has identified a need for additional information, data, analysis or discussion in the Final EIS in order for the EPA to fully assess environmental impacts from the project. Specifically, the EPA has requested additional information regarding the Ross Proposed Action and its potential for impacts to water and air quality in order to assure adequate protection of these resources. A full description of the EPA's rating system is enclosed.

We hope that our comments will assist you in clarifying and further reducing environmental impacts of this project. We appreciate the opportunity to review and comment on the Draft EIS. If we may provide further explanation of our comments, please contact me at 303-312-6925, or Lisa Lloyd, at 303-312-6537.

Sincerely,

Suzanne J. Bohan
Director, NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

Attachment: Minor Comments
Enclosure: EPA's Rating System Criteria

EPA Minor Comments on
Draft Environmental Impact Statement (EIS)
for the Ross ISR Project in Crook County, Wyoming

The EPA offers the following minor edits and modifications to help enhance information presentation and consistency in the Final EIS. We hope that you find these suggestions useful when preparing the Final EIS.

Injection rates and volumes: Our official comment letter mentioned explaining inconsistencies relating to potential impacts and mitigation measures. Presenting a clear understanding of the amount of material to be disposed by underground injection is one such area where clarification would be useful.

Beginning on page 2-40, flow rates for reverse osmosis treatment brine and other byproduct fluid wastes are provided for each major project phase: initial production-only (235 L/min = 62 gpm), concurrent production-restoration (859 L/min = 227 gpm), and final restoration-only (719 L/min = 190 gpm). Disposal well permits have been issued for up to five wells with no more than 75 gpm injection each, [227/75 = 3 wells needed; 2 additional wells were permitted in case the individual well injection rate is limited by the maximum injection pressure]. Waste fluid for deep-well injection during the decommissioning phase is reported to be far less (page 4-22, Section 4.4.1.4, 38 L/min = 10 gpm). Later in the Draft EIS on page 4-40, Section 4.5.1.3, the waste fluids disposal estimate is incorrectly restated as 860 L/day = 227 gal/day. The inconsistency leads to confusion for the reader.

EPA appreciates the information presented in Page 4-100, Table 4-9, "Ross Project Waste Streams." Nevertheless, the metric conversion (0.9 cubic meters/min rounded up from 8.6) becomes another opportunity for uncertainty for the reader if not clarified in a footnote. On Page 4-103, Section 4.14.1.2, another estimate for deep-well disposal (240 L/min = 62 gpm) is reported for the operational phase which can be confusing with the numbers appearing on Page 2-40 if not more thoroughly explained. Finally, on Page 4-105, Section 4.14.1.3, a different estimate is made for the fluid byproduct waste generation total during the restoration phase (740 L/min = 190 gpm) and cites evaporative loss from the surface impoundments as a reduction in the net flow rate reporting to deep injection disposal. EPA recommends that much of this confusion could be resolved by modifying Table 4-9 to show the net site water balance during each project phase: construction, early or initial production prior to restoration, concurrent production with restoration, late or final restoration prior to decommissioning, and decommissioning.

Pg. xix: "The ore zone is that portion of the aquifer that has been permanently exempted by the U.S. Environmental Protection Agency (EPA) from requirements as an underground source of drinking water under the Safe Drinking Water Act." The area that is exempted does not define the ore zone. We suggest, "For injection activities to take place, the mine area must be included in a portion of …"

Page 1-11, Table 1.2: "Aquifer Exemption **Permit** for Class I Injection Wells (40 CFR 144, 146)," should be "Aquifer Exemption **Approval** for Class I Injection Wells." (Emphasis added for clarity of suggested change.) Also, under the status, we suggest adding that the EPA plays a role in the Aquifer Exemption Approval for Class III Injection Wells.

Page 2-21, lines 7-11: A "line-drive" well pattern option is mentioned. We recommend explaining how the line-drive well pattern is designed and why aquifer restoration efforts using this pattern will enhance mitigation measures.

Page 2-25 text box: "Usable aquifer" has no definitive meaning in the Underground Injection Control (UIC) program. The recommended language for UIC Class 1 wells is: "Wells in this Class are used for the deep disposal of industrial, commercial, or municipal waste below the deepest Underground Source of Drinking Water (USDW)."

Page 2-32, Lines 2-3: "Off-gas from the precipitation tanks and dryer would be filtered to remove particulates and directed to a wet scrubber to capture ammonia for reuse." Line 12-13 of the same page indicates that a performance-monitoring station would be located at the CPP's exhaust fan's point of discharge at the roof. To provide a clearer picture of the mitigation efforts, it would be help for the Final EIS to explain: 1) what emission points will have particulate control and wet scrubbing; 2) at what control efficiencies; 3) what contaminants will be captured; and 4) what exhaust streams will be monitored. A more detailed discussion of emission points and their control technology is included in Section 4 of *Air Quality Permit Application for Ross In-Situ Uranium Recovery Project,* (STRATA 2011c). EPA recommends including this information in the Final EIS as it helps increase understanding of air quality mitigation measures.

Page 2-32, Table 2.2: The "Typical" pH standard unit is identified as 8, the "Minimum" as 6, and the "Maximum" as 6.5. Suggest that there is an error here and the "Maximum" is probably 8.

Page 3-2, Figure 3.1: We recommend adding the Land Use Categories to the map legend.

Page 3-4, Line 39 and page 3-7, Figure 3.4: The scale of the maps provided does not allow the reader to follow the directions listed on page 3-4. Also, the EIS states that to reach the project a vehicle would travel south on US 14/16, however, from the provided map it appears that project is reached by traveling north from I-90. We suggest a map with appropriate scale necessary to depict the project location and road access is included in the final EIS.

Page 3-23, lines 7-8. The Wyoming Water Development Commission publishes a Northeastern Wyoming water plan report that shows the Oshoto maximum capacity to be 339 acre-feet. The information disclosed on the maximum capacity of the Oshoto Reservoir appears to be the current annual water rights appropriation and not the maximum capacity as stated.

Page 3-45, Section 3.5.3: EPA commends the NRC for disclosing English equivalents in addition to SI (modern metric) engineering units. We recommend rechecking all such conversions as there are errors in engineering unit conversion in the Draft EIS. One example is: 1.9 L/s = 30 gal/s.; this one should be 1.9 L/s = 30 gal/min.

Page 3-71: We note two typographical errors in lines 31 and 32. The annual $PM_{2.5}$ NAAQS is listed as being 15 $\mu g/m^3$. The current standard is 12 $\mu g/m^3$, which is referenced correctly Table 3.17. Secondly, the 24-hour $PM_{2.5}$ standard is listed as being 5 $\mu g/m^3$, but should be listed as 35 $\mu g/m^3$. Also on this page, the text states that, "Existing regional pollutants are known to include gaseous emissions, such as NO_2 and O_3..." For completeness, we recommend this list include PM_{10}, $PM_{2.5}$, CO, NOx (more generally), SO_2, VOC, HAPs, CO_2, and CH_4.

Page 3-72, Line 9: "nitrous oxides" should be nitrogen oxides.

Page 3-109, line 39: Part 192 does not regulate TENORM, but regulates uranium byproduct material, defined in 40 CFR § 193.31(b). We recommend modifying the text to reflect this subtle but important difference.

Table 4-9 and page 4-103, lines 33-35: The table provides a very important summary of disposal methods and quantities. In order for the table to provide a complete picture of disposal, it would be valuable if it also included discharge to surface impoundments (for the excess permeate generated during the first two years as is stated in the text).

Page 6-3, Table 6.1: The project operational environmental monitoring program summarized in Table 6.1 would be more informative if it included not only the location, analyte, sampling frequency, and number of sample locations, but also the expected range of values based upon the Pre-licensing baseline water-quality data described in Chapter 3. For GW monitoring wells, radionuclide analysis for uranium (diss), Ra226, Th230, Pb210, Po210, gross alpha, gross beta, is proposed. Including an adaptive management approach for responding to unanticipated water-quality monitoring results that are outside the range of expected values in the environmental monitoring plan would be valuable additional mitigation measure.

Page 6-6, Section 6.2.4: This section discusses proposed groundwater quality monitoring wells. The EPA recommends including a map that clearly depicts the locations. Such a map is a valuable way of displaying the information discussed in the text.

Page 6-8, Section 6.3.2.1: It is believed that SRP should be cited as SPR or "Standards for Protection against Radiation", 10 CFR 20.